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EXAMINER	
SINGH, RAMNANDAN P	

ART UNIT	PAPER NUMBER
2614	

NOTIFICATION DATE	DELIVERY MODE
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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	Application No. 10/612,523	Applicant(s) CHHEDA ET AL.	
Office Action Summary	Examiner Ramnandan Singh	Art Unit 2614	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 02 July 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-28 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-28 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date (<u>See Continuation Sheet</u>) | 6) <input type="checkbox"/> Other: _____ |

Continuation of Attachment(s) 3). Information Disclosure Statement(s) (PTO/SB/08), Paper No(s)/Mail Date :i) Nov 06, 2006; (ii) Dec 13, 2004; and (iii) July 2, 2003.

DETAILED ACTION

Drawings

1. The drawings are objected to under 37 CFR 1.83(a) because they fail to show transistors, relays and circuit breakers as claimed in claims 13-15. Any structural detail that is essential for a proper understanding of the disclosed invention should be shown in the drawing. MPEP § 608.02(d). Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Objections

2. Claim 1 is objected to because of the following informalities:

Claim recites the limitation "power inputs of the computer systems **is** connected". This is grammatically incorrect. Change the word "is" to the word "are".
Appropriate correction is required.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. Claims 1-4, 8-9, 13, 16-17, 20 and 28 are rejected under 35 U.S.C. 102(b) as being anticipated by Wright et al [US 5,774,736].

Regarding claim 1, Wright et al disclose an apparatus for supplying power to a set of servers or computer systems, as shown in Fig. 2, the apparatus comprising:

at least one power supplying bus bar (208) to which power inputs of the computer systems (200a, 200b) are connected [Fig. 2];

a plurality of power supplies (202a), (202b), (200c),...;

a plurality of power switches (204) [col. 7, lines 23-30] for selectively connecting the power supplies to the at least one bus bar [Fig. 2; col. 5, line 60 to col. 6, line 5]; and

a power supply management controller (206) configured to control the power switches such that the power is supplied redundantly to the computer systems [Figs. 2-4; col. 2, lines 14-41; col. 5, line 36 to col. 8, line 58; claim 1].

Claims 20 and 28 are essentially similar to claim 1 except for receiving status data and determining a need to re-locate the power supplies. Wright et al further disclose receiving status data and determining a need to re-locate the power supplies [col. 4, lines 3-17; col. 4, line 57 to col. 5, line 24; col. 7, lines 1-6; col. 20, lines 8-14].

Regarding claim 2, Wright et al further disclose the apparatus comprising: at least two bus bars (208) and (210) such that further redundancy is provided [Fig. 2; col. 7, lines 23-30].

Regarding claim 3, Wright et al further disclose the apparatus comprising an expander device for coupling the power supply management controller to control inputs of the power switches (204) [Fig. 2; col. 7, lines 23-30].

Regarding claim 4, Wright et al further disclose the apparatus, wherein each power supply includes a power sensor that measures at least voltage and current of power supplied, and wherein the power supply management controller (206) is further configured to receive status information from the power supplies [Fig. 2; col. 4, lines 3-17; col. 4, line 57 to col. 5, line 24; col. 7, lines 1-6; col. 20, lines 8-14].

Regarding claim 8, Wright et al further disclose the apparatus, wherein the plurality of power supplies each supply power at a same voltage level [col. 2, lines 7-13; col. 7, lines 31-39].

Regarding claim 9, Wright et al further disclose the apparatus, wherein the plurality of power supplies (202a, 202b, 202c, ...) are of non-uniform power capacities (wattage) [col. 1, lines 64-67; col. 5, lines 28-35].

Regarding claim 13, Wright et al further disclose the apparatus, wherein the switches comprise field effect transistors of sufficiently high speed to avoid detrimental gaps in power supplied [Fig. 4; col. 8, lines 23-58].

Regarding claim 16, Wright et al further teach the apparatus comprising: a communications channel between the computer systems (.e. CPUs) and the power supply management controller (206) for communicating power usage information from the computer systems to the power supply management controller [Fig. 2].

Regarding claim 17, Wright et al further teach the apparatus, wherein a bus bar (208) is coupled via the switches to at least two power supplies 202a and 202b.

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claims 1, 2, 4-5, 16-21, 26 and 28 are rejected under 35 U.S.C. 103(a) as being unpatentable over Butka et al [US 6,735,704 B1].

Regarding claim 1, Butka et al teach an apparatus shown in Fig. 1, for supplying power to a set of loads (not shown), the apparatus comprising:

at least one power supplying bus bar (12) to which power inputs of loads are connected [Fig. 1];

a plurality of power supplies 16A, 16B,... [Fig. 1];

a plurality of power switches (i.e. controllers 18A, 18B, ..., to activate each power supply) [col. 1, lines 60-66] are coupled to the power bus for selectively connecting the power supplies to the at least one bus bar [Fig. 1; col. 4, lines 14-20]; and

a power supply management controller (20) configured to control the power switches (i.e. power controllers 18A, 18B, ...) such that the power is supplied redundantly to the loads (not shown) [Fig. 1; col. 3, line 20 to col. 4, line 51].

Since Butka et al teach supplying power to a set of power subsystems (i.e. units) of a distributed system, wherein each subsystem further comprises a load (not shown) [Fig. 1; col. 3, lines 57-65], it would have been obvious to a person of ordinary skill in the art, at the time of the invention, to represent loads as power-consuming devices including a set of servers or computer systems in order to make and use the claimed invention of Butka et al subject to circuit, system and design constraints.

Claims 20 and 28 are essentially similar to claim 1 except for receiving status data and determining a need to re-locate the power supplies. Butka et al further teach receiving status data and determining a need to re-locate the power supplies [Figs. 2-3; col. 3, lines 36-49; col. 4, lines 8-17].

Regarding claim 4, Butka further teach the apparatus, wherein each power supply includes a power sensor that measures at least voltage and current of power supplied, and wherein the power supply management controller is further configured to receive status information from the power supplies [Figs. 2-3; col. 3, lines 36-49; col. 4, lines 8-17].

Regarding claim 5, Butka further teach the apparatus, wherein the status information is retrieved by way of a polling type mechanism [Fig. 2, block 120; col. 5, lines 9-32; Fig. 3; col. 6, lines 14-24].

Claim 21 is essentially similar to claim 5 and is rejected for the reasons stated above.

Regarding claim 16, Butka et al further teach the apparatus comprising: a communications channel (22) between the computer systems and the power supply management controller for communicating power usage information from the computer systems to the power supply management controller [Fig. 1].

Regarding claim 17, Butka et al further teach the apparatus, wherein a bus bar (12) is coupled via the switches to at least two power supplies 16A and 16B.

Regarding claims 2, 18-19, Butka et al further suggest modifying the apparatus shown in Fig. 1, to include a computer system connected to the at least two bus bars, and a power supply coupled via the switches to at least two bus bars [Fig. 1; col. 7, lines 49-53].

Regarding claim 26, Butka further teach the method for receiving additional status data relating to power consumption from the plurality of computer systems [Figs. 1-3; col. 3, lines 22-52; col. 3, lines 36-49; col. 4, lines 8-17].

7. Claim 22 is rejected under 35 U.S.C. 103(a) as being unpatentable over Butka et al as applied to claim 21 above, and further in view of Wagner et al [US 6,005,163].

Regarding claim 22, Butka et al do not teach expressly applying a round robin type method to polling.

Wagner teach applying a round robin type scheduling to polling to make a decision [Fig. 6; col. 2, lines 26-39; col. 8, line 36 to col. 10, line 21].

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to combine the polling technique of Wagner et al with Butka et al in order to provide a better method of obtaining status reports rather than using an interrupt scheme for the same [Wagner et al; col. 10, lines 27-36].

8. Claims 24-25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Butka et al as applied to claim 20 above, and further in view of Saadeh et al [US 5,283,905].

Regarding claim 24, Butka et al do not teach expressly applying predictive failure analysis to the status data.

Saadeh et al teach applying predictive failure analysis to the status data to predict an upcoming failure of a power supply [Figs. 1-3; col. 2, lines 9-23].

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to apply the predictive failure analysis method of Saadeh et al with Butka et al to the status data in order to make the computer power supply system of Butka et al fault-tolerant.

Regarding claim 25, the limitation is shown above.

9. Claim 27 is rejected under 35 U.S.C. 103(a) as being unpatentable over Butka et al as applied to claim 20 above, and further in view of Kawanishi et al [US 7,058,480 B1].

Regarding claim 27, Butka et al do not teach expressly considering prioritization factors.

Kawanishi et al teach a method, wherein the determining takes into account prioritization factors [col. 10, lines 4-10; col. 17, lines 38-54].

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to combine the teachings of Kawanishi et al with Butka et al in order to

supply power to critical demands, when the full power demand can not be met in real-time. [Kawanishi et al; col. 9, line 62 to col. 10, line 4].

10. Claims 5-7, 13-15, 23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wright et al as applied to claims 4 and 20 above, and further in view of Butka et al [US 6,735,704 B1].

Regarding claim 5, Wright et al do not teach expressly using a polling type mechanism to retrieve status information.

Butka et al teach that the master controller polls for instructions whether or not to activate the power supply associated with the switch [Fig. 2, block 120; col. 5, lines 9-32; Fig. 3; col. 6, lines 14-24].

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to combine the polling technique of Butka et al with Wright et al in order to ensure full communications among all computer subsystems regarding a decision about a need for re-location of power supplies [Butka et al; col. 6, lines 14-23].

Regarding claim 6, Wright et al teach an apparatus, wherein the

status information is received by way of an interrupt type mechanism (114) [col. 4, lines 18-23; col. 5, lines 6-15].

Claim 23 is essentially similar to claim 6 and is rejected for the reasons stated above.

Regarding claim 7, Wright et al teach an apparatus comprising: a serial bus multiplexer for multiplexing signals from the plurality of power supplies into a serial signal to the power supply management controller [col. 4, lines 7-17; col. 4, lines 34-65; col. 5, lines 6-15].

Regarding claim 13, Wright et al further disclose the apparatus, wherein the switches comprise field effect transistors of sufficiently high speed to avoid detrimental gaps in power supplied [Fig. 4; col. 8, lines 23-58].

Regarding claims 14 and 15, since Wright et al teach using the switches comprising field effect transistors [Fig. 4; col. 8, lines 23-58], it would have been obvious to a person of ordinary skill in the art, at the time of the invention, to use switches of any type including relays and circuit breakers in order to make and use the claimed invention of Wright et al subject to circuit, system and design constraints.

11. Claim 10 is rejected under 35 U.S.C. 103(a) as being unpatentable over Wright et al et al as applied to claim 8 above, and further in view of Koch et al [US 6,153,946].

Regarding claim 10, Wright et al do not teach expressly the apparatus comprising a rack into a computer system

Koch et al teach a computer rack on to which computer systems are mounted [Fig. 3; col. 5, lines 11-25; col. 6, lines 60-67; col. 8, lines 20-32].

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to combine the teachings of Koch et al with Wright et al in order to mount redundant power supply units to provide required redundancy [Loch et al; col. 1, lines 54-63].

12. Claims 11-12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wright et al as applied to claim 1 above, and further in view of Raynham et al [US 5,747,889].

Regarding claims 11-12, although Wright et al teach an apparatus having a plurality of power supplies (202a), (202b), (200c),...[Fig. 2]; they do not teach a cooling system.

Raynham et al teach a redundant power supply and storage system , wherein a cooling system is provided for cooling the plurality of power supplies [Figs. 9A, 9B; col. 8, line 51 to col. 9, line 16].

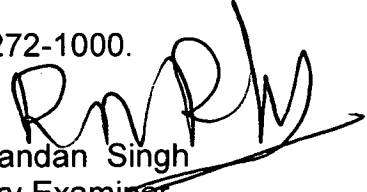
At the time of the invention, it would have been obvious to a person of ordinary skill in the art to combine the teachings of Raynham et al with Wright et al in order to maintain temperatures of power supplies within a safe limit during a power supply failure [Raynham et al; 8, lines 61-67].

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ramnandan Singh whose telephone number is (571) 272-7529. The examiner can normally be reached on M-TH (8:00-5:30).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Fan Tsang can be reached on (571) 272-7547. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.



Ramnandan Singh
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